REMARKS

Claims 1-10, 13-17, 21-25, 28-45, 48-68, 98, 99 and 101-127 are pending. Claims 101-124 are withdrawn.

Claims 1 and 20 are combined and Claim 20 is cancelled. Also, consistent with this amendment Claims 28 and 41 are amended and Claims 18, 18, 46 and 47 are cancelled.

I. Chakrabarti et al. (US 2002/0121319 A1)

Claims 1-10, 13-25, 28-68, 98, 99 and 125-127 are rejected under 35 USC §103(a) as being unpatentable over Chakrabarti et al. (US 2002/0121319 A1).

The Office action asserts Chakrabarti et al. teaches a broadly overlapping composition so Chakrabarti et al. has created a prima facie case of obviousness of the presently claimed invention. Chakrabarti et al. discloses a Mg-content in the range of 1.2-1.9 wt. % which is below the claimed lower-limit for the Mg content.

Applicant respectfully submits at least some of the assertions at the next to last paragraph at page 3 of the Office action refer to cancelled claims.

Example 6 on page 27 of the present application, shows an alloy A having an alloy composition within the range of Chakrabarti et al. Whereas the alloy B is an alloy falling within the present claimed range, and both alloys have been processed in a similar manner. As explained in paragraph [0090] of the present application, this comparison shows that the positive addition of Mn in the defined range significantly improves the toughness (both UPE and Ts/Rp) of the sheet product resulting in a very good and desirable strength-toughness balance. Compare for example the UPE and Ts/Rp results of Table 10 on page 28 of the present application.

Element	Chakrabarti et al. [0023]	Amended Claim 1	Example 6 on page 27 of the present application, alloy A (within Chakrabarti et al.)	Example 6 on page 27 of the present application, alloy B (present invention)
Zn	about 6 to 9	about 6.5 to 7.43	7.4	7.36
Mg	about 1.3 to 1.9	about 1.92 to 2.2	1.86	1.96
Cu	about 1.4 to 1.9 with Mg ≤ (%Cu+0.3 max)	about 1.0 to 1.9	1.61	1.59
Zr	up to about 0.3	about 0.04-0.3	0.08	0.09
Fe	-	< about 0.3	0.08	0.06
Si	-	< about 0.20	0.03	0.03
Sc	≤ about 0.4	< about 0.7		
Cr	-	< about 0.4		
Hf	≤ about 0.3	< about 0.3		
Mn	-	0.05 to 0.30	-	0.07
Ti	-	< about 0.4	0.03	0.03
V	-	< about 0.4		
other impurities or incidental elements		each < 0.05, total < 0.15		
balance	aluminium	aluminium		
	one or more of Zr, Sc or Hf is present	optionally one or more of Sc, Cr, Hf, Mn, Ti, V		
UPE			90	152
Ts/Rp			1.40	1.58

Also, unexpected results are illustrated in Example 8 on pages 30 to 31 of the present application, wherein alloy E would fall within the compositional ranges disclosed in Chakrabarti et al., whereas alloy F falls within the compositional range of amended Claim 1. Mechanical properties resulting from Example 8 are listed in Table 15 in the present application. As explained at paragraph [0099], the results of Table 15 on page 31 of the present application), compared to the alloy E show the positive addition of Mn increases the tensile properties. Most importantly the properties, in particular the

elongation (or A50), in the ST-direction are significantly improved. The elongation (or A50) in the ST-direction is an important engineering parameter for structural parts of an aircraft, e.g., wing plate material.

Element	Chakrabarti et al. [0023]	Amended Claim 1	Example 8 on pages 30 to 31 of the present application, alloy E (within Chakrabarti et al.)	Example 8 on pages 30 to 31 of the present application, alloy F (present invention)
Zn	about 6 to 9	about 6.5 to 7.43	7.4	7.4
Mg	about 1.3 to 1.9	about 1.92 to 2.2	1.81	1.95
Cu	about 1.4 to 1.9 with Mg $\leq$ (%Cu+0.3 max)	about 1.0 to 1.9	1.49	1.58
Zr	up to about 0.3	about 0.04-0.3	0.08	0.09
Fe	-	< about 0.3	0.04	0.05
Si	-	< about 0.20	0.02	0.03
Sc	$\leq$ about 0.4	< about 0.7	-	-
Cr	-	< about 0.4	-	-
Hf	$\leq$ about 0.3	< about 0.3	-	-
Mn	-	*0.05 to 0.30*	-	0.07
Ti	-	< about 0.4	0.03	0.03
V	-	< about 0.4		
other impurities or incidental elements	-	each < 0.05 total < 0.15	-	-
balance	aluminium	aluminium	-	-
	one or more of Zr, Sc or Hf is present	optionally one or more of Sc, Cr, Hf, Mn, Ti, V	-	-
elongation in ST-direction			5.3%	8.1%

These comparisons within Examples 6 and 8 show the benefit of adding Mn simultaneously with the increased Mg of the present invention. It is respectfully submitted these comparisons are closer than comparing to the alloy examples of Chakrabarti et al. Chakrabarti et al. [0027] states Mn is preferably not over about 0.05

or 0.1 Mn. However, none of the alloys of the Chakrabarti et al. examples have Mn and none of the alloys of the Chakrabarti et al. examples have Mg at a level as high as Example 6 on page 27 of the present application, alloy A (within Chakrabarti et al.) and Example 8 on pages 30 to 31 of the present application, alloy E (within Chakrabarti et al.).

The compositions of the Chakrabarti et al. examples are as follows:

Alloy	Zn	Cu	Mg	Fe	Si	Zr	Ti
Chakrabart et al, Example 1	7.35	1.64	1.46	0.04	0.02	0.11	-
Chakrabarti et al, Example 2; COMP 1	7.35	1.64	1.46	0.038	0.022	0.11	0.02
Chakrabarti et al, Example 2; COMP 2	7.39	1.91	1.48	0.036	0.024	0.11	0.02

Chakrabarti et al. [0086], TABLE 4 discloses the following compositions

Alloy	Zn	Cu	Mg	Fe	Si	Zr	Ti
A	7.3	1.6	1.5	0.04	0.02	0.11	0.02
B	6.7	1.9	1.5	0.05	0.02	0.11	0.02
C	7.4	1.9	1.5	0.04	0.02	0.11	0.02

Chakrabarti et al. [0129], TABLE 11 discloses the following compositions

Alloy	Zn	Mg	Cu	Zr	Fe	Si
Plates D, F and G	7.25	1.45	1.54	0.11	0.03	0.007
Forging E	7.63	1.42	1.62	0.11	0.04	0.007

There is no motivation within Chakrabarti et al. to move the alloy composition towards a composition as presently claimed, while achieving an improved set of desirable engineering properties.

II. Flidlyander et al. (US 6,726,878)

Claims 1-10, 13-25, 28-68, 98, 99 and 125-127 are rejected under 35 USC §103(a) as being unpatentable over Flidlyander et al. (US 6,726,878).

The Office action asserts Flidlyander et al. teaches an alloy comprising (in wt %): 6.35-8.9% Zn, 0.5-2.5% Mg, 0.8-1.3% Cu, 0.07-0.20% Zr, 0.01-0.2% Si, 0.06-0.25% Fe, 0.001-0.05% Cr, 0.001-0.1% Mn (col. 3, lines 15-20). It is respectfully submitted col. 3, lines 15-20 also teaches other ingredients. This teaching and present Claim 1 compare as follows:

Element	Flidlyander et al. [col. 3, lines 15-20]	Amended Claim 1
Zn	6.35-8.9	about 6.5 to 7.43
Mg	0.5-2.5	about 1.92 to 2.2
Cu	0.8-1.3	about 1.0 to 1.9
Zr	0.07-0.20	about 0.04-0.3
Fe	0.06-0.25	< about 0.3
Si	0.01-0.2	< about 0.20
Sc	-	< about 0.7
Cr	0.001-0.05	< about 0.4
Hf	-	< about 0.3
Mn	0.001-0.1	*0.05 to 0.30*
Ti	0.03-0.1	< about 0.4
V	-	< about 0.4
Be	0.0001-0.09	-
K	0.0001-0.01	-
Na	0.0001-0.01	-
Ca	0.0001-0.01	-
other impurities or incidental elements		each < 0.05 total < 0.15
balance	aluminium	aluminium
	at least one of K, Na, Ca	optionally one or more of Sc, Cr, Hf, Mn, Ti, V

III. Shahani et al. (US 6,027,582)

Claims 1-10, 13-25, 28-68, 98, 99 and 125-127 are rejected under 35 USC §103(a) as being unpatentable over Shahani et al. (US 6,027,582).

Element	Shahani et al. [Abstract]	Amended Claim 1
Zn	5.7<Zn<8.7	about 6.5 to 7.43
Mg	1.7<Mg<2.5	about 1.92 to 2.2
Cu	1.2<Cu<2.2	about 1.0 to 1.9
Zr	0.05<Zr<0.15	about 0.04-0.3
Fe	0.07<Fe<0.14	< about 0.3
Si	<0.11	< about 0.20
Sc		< about 0.7
Cr	<0.02	< about 0.4
Hf		< about 0.3
Mn	<0.02	*0.05 to 0.30*
Ti		< about 0.4
V		< about 0.4
other impurities or incidental elements	each < 0.05 total < 0.10	each < 0.05 total < 0.15
balance	aluminium	aluminium
	Cu+Mg<4.1; Mg>Cu	optionally one or more of Sc, Cr, Hf, Mn, Ti, V

Amended Claim 1 recites Mn of 0.05 to 0.30. This is above the Mn<0.02 of Shahani et al. As explained above adding Mn in the presence of the other elements in their claimed ranges leads to unexpected results.

None of the examples of Shahani et al have Mn. It is submitted the following example of Shahani et al. is closest to the presently claimed invention.

Example 1

	Zn	Mg	Cu	Si	Fe	Zr
alloy X	6.4	2.0	1.29	0.05	0.10	0.11

This example has Zn, Mg, Cu, Si, Fe and Zr in the claimed ranges.

The following table compares alloys A and E in the present application with Shahani et al. alloy X. Alloy A falls within Shahani et al.'s abstract disclosure. Alloy E is within the disclosure at Shahani et al., col. 3, but its Fe level is slightly below that of Shahani et al.'s abstract.

Element	Shahani et al. [Abstract]	Example 6 on page 27 of the present application, alloy A (within Shahani et al.)	Example 8 on pages 30 to 31 of the present application, alloy E (within Shahani et al.)	Shahani, et al., Example 1, Alloy X
Zn	5.7<Zn<8.7	7.4	7.4	6.4
Mg	1.7<Mg<2.5	1.86	1.81	2.0
Cu	1.2<Cu<2.2	1.61	1.49	1.29
Zr	0.05<Zr<0.15	0.08	0.08	0.11
Fe	0.07<Fe<0.14	0.08	0.04	0.10
Si	<0.11	0.03	0.02	0.05
Sc	-	-	-	
Cr	<0.02	-	-	
Hf		-	-	
Mn	<0.02	-	-	
Ti	-	0.03	0.03	
V	-	-	-	
other impurities or incidental elements	each < 0.05 total < 0.10			
balance	aluminium			
	Cu+Mg<4.1; Mg>Cu			

It is respectfully submitted the alloys A and E in the present application have a composition are closer to the present invention than Shahani et al. alloy X. In particular as seen in the tables in the section dealing with Chakrabarti et al., the Zn, Cu, Zr, Si, and Ti levels of alloys A and E are significantly closer to those levels of respective alloys B and F, while the Mg levels of alloys A and B are 0.10 apart and the Mg levels of alloys E and F are 0.14 apart.

As explained above, the comparison in the present application of Alloy A with Alloy B as well as the comparison of Alloy E with Alloy F shows the unexpected results of adding Mn together with the presently recited Mg level. It is respectfully submitted this shows the unexpected advantage of adding Mn over Shahani et al. which limits Mn to <0.02.

IV. Commercial Success

The alloy product according to the present invention has achieved commercial success as it is under qualification with various aircraft producers. This is evidence of commercial success which is an accepted indicator for non-obviousness.

Another indication of commercial success is that Aleris Aluminum Koblenz (previously Corus Aluminium Walzprodukte), the assignee of the present application, registered alloy AA7081 with the Aluminium Association in May 2005. The registered limits are (main alloy elements, and in wt. %):

Zn	6.9 – 7.5
Cu	1.2 – 1.8
Mg	1.8 – 2.2
Zr	0.06 – 0.15
Mn	max. 0.25
Cr	max. 0.04

These are the outer-limits for these elements. The preferred composition is narrower and somewhat near the center of the ranges, and close to various examples according to the invention set out in the present application.

V. Obviousness-type Double Patenting

Applicants offer to submit a terminal disclaimer in response to this rejection after the other rejections are overcome.

VI. Conclusion

In view of the above it is respectfully submitted all objections and rejections are overcome. Thus, a Notice of Allowance is respectfully requested.

Respectfully submitted,
/anthony p venturino/

Date: May 20, 2008 By: _____
Anthony P. Venturino
Registration No. 31,674

APV/bms
ATTORNEY DOCKET NO. 8674.006.US0000

NOVAK, DRUCE + QUIGG, L.L.P.
1300 I STREET, N.W., SUITE 1000 West Tower
WASHINGTON, D.C. 20005
TEL. 202-659-0100 / FAX. 202-659-0105